4/5/04 PCT

DT07 Rec'd PCT/PTO 0 2 APR 2004

PTO/SB/21 (08-03)
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TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission	20

Application Number	09/889,867
Filing Date	July 20, 2001
First Named Inventor	Halle MORTON
Art Unit	1646
Examiner Name	J. L. Andres
Attorney Docket Number	524372000100

ENCLOSURES (*Check all that apply*)

- [ ] Fee Transmittal Form
  - [ ] Fee Attached
- [ ] Amendment/Reply
  - [ ] After Final
  - [ ] Affidavits/declaration(s)
- [ ] Extension of Time Request
- [ ] Express Abandonment Request
- [ ] Information Disclosure Statement
- [ ] Certified Copy of Priority Document(s)
- [ ] Response to Missing Parts/ Incomplete Application
  - [ ] Response to Missing Parts under 37 CFR 1.52 or 1.53
- [ ] Drawing(s)
- [ ] Licensing-related Papers
- [ ] Petition
- [ ] Petition to Convert to a Provisional Application
- [ ] Power of Attorney, Revocation Change of Correspondence Address
- [ ] Terminal Disclaimer
- [ ] Request for Refund
- [x] CD, Number of CD(s) 1
- [ ] After Allowance Communication to Group
- [ ] Appeal Communication to Board of Appeals and Interferences
- [ ] Appeal Communication to Group **(Appeal Notice, Brief, Reply Brief)**
- [ ] Proprietary Information
- [ ] Status Letter
- [x] Other Enclosure(s) (please identify below):

Re-submission of Amendment and Response dated November 5, 2003 (2 pages)
Copy of Amendment and Response submitted November 5, 2003 (15 pages)
Copy of Statement and Paper copy of Sequence Listing submitted November 5, 2003 (3 page)
Copy of Return Receipt Postcard evidencing receipt by USPTO on November 5, 2003 (1 page)
Return Receipt Postcard

Remarks

Customer No. 25225

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	MORRISON & FOERSTER LLP Kate H. Murashige - 29,959
Signature	Kate H. Murashige
Date	April 2, 2004

I hereby certify that this correspondence is being deposited with the U.S. Postal Service as Express Mail, Airbill No. EL 984097717 US, in an envelope addressed to: MS Non-Fee Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date shown below.

Dated: April 2, 2004 Signature: Marian L. Christopher (Marian L. Christopher)

sd-192447

Docket No.: 524372000100
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Halle MORTON et al.

Application No.: 09/889,867 Art Unit: 1646

Filed: July 20, 2001 Examiner: J. L. Andres

For: CHAPERONIN 10 AND BETA-INTERFERON THERAPY OF MULTIPLE SCLEROSIS

COMMUNICATION RE RE-SUBMISSION OF AMENDMENT AND RESPONSE DATED NOVEMBER 5, 2003

MS Non-Fee Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

INTRODUCTORY COMMENTS

This is in response to a telephone conversation with Examiner Andres wherein she advised the U.S. Patent and Trademark Office had not received a response to the non-final Office Action dated August 5, 2003 (Paper No. 9), for which a response was due on November 5, 2003.

Filed herewith is a copy of the Applicants' Amendment and Response Under 37 C.F.R. 1.111, including Amendment, Statement and paper copy of Sequence Listing, Sequence Listing on CD-ROM (1 disk), and Return Receipt Postcard evidencing receipt of the response.

Reconsideration and allowance of the pending claims, as amended, in light of the remarks presented in the Amendment dated November 5, 2003, are respectfully requested.

sd-192446

REMARKS

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue. If it is determined that a telephone conference would expedite the prosecution of this application, the Examiner is invited to telephone the undersigned at the number given below.

In the event the U.S. Patent and Trademark office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing docket no. 524372000100. However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Dated: April 2, 2004

Respectfully submitted,

By Kate H. Murashige

Kate H. Murashige
Registration No.: 29,959
MORRISON & FOERSTER LLP
3811 Valley Centre Drive, Suite 500
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(858) 720-5112

COPY

PTO/SB/21 (08-03)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
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Filing Date	July 20, 2001
First Named Inventor	Halle MORTON
Art Unit	1646
Examiner Name	J. Andres
Attorney Docket Number	524372000100

Total Number of Pages in This Submission	16 + 1 CD

ENCLOSURES (*Check all that apply*)

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- [ ] Status Letter
- [x] Other Enclosure(s) (please identify below):

Sequence Listing Statement (2 pages)
Sequence Listing - Paper Copy (1 page)
Sequence Listing - Computer-Readable (1 CD)
Return postcard

Remarks

Customer No. 25225

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	MORRISON & FOERSTER LLP Karen R. Zachow, Ph.D. - 46,332
Signature	Karen R Zachow
Date	November 5, 2003

I hereby certify that this correspondence is being deposited with the U.S. Postal Service as Express Mail, Airbill No. EL961005862US, in an envelope addressed to: Mail Stop Non-Fee Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date shown below.

Dated: 11-5-03 Signature: _____ (Michael Boyd)

sd-171154

Docket No.: 524372000100
(PATENT)

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Dated: 11-5-03 Signature: _____ (Michael Boyd)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Halle MORTON and Alice CAVANAGH

Application No.: 09/889,867 Confirmation No.: 3108

Filed: July 20, 2001 Art Unit: 1646

For: CHAPERONIN 10 AND BETA-INTERFERON THERAPY OF MULTIPLE SCLEROSIS Examiner: J. Andres

STATEMENT TO SUPPORT FILING AND SUBMISSION IN ACCORDANCE WITH 37 C.F.R. §§ 1.821-1.825

MS Non-Fee Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

COPY

Dear Sir:

In response to the Office Action mailed on August 5, 2003 (Paper No. 9), the undersigned hereby states that the content of the attached paper copy of the sequence listing and the computer readable copy of the sequence listing submitted in accordance with 37 C.F.R. §§ 1.821-1.825, are identical. The submission includes no new matter.

Applicants request consideration and entry of the Sequence Listing paper copy and computer readable copy. Pursuant to 37 C.F.R. 1.77, please enter the paper copy of the Sequence Listing after the Abstract.

In the unlikely event that the Patent Office determines that an extension and/or other relief is required as a result of this statement, Applicants petition for any required relief including extensions of time and authorize the Assistant Commissioner to charge the cost of such petitions and/or other fees due to our **Deposit account no. 03-1952** referencing docket no. 524372000100. However, the Assistant Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Dated: November 5, 2003

Respectfully submitted,

By Karen R Zachow

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SEQUENCE LISTING

<110> Morton, Halle
Cavanagh, Alice

<120> Chaperonin 10 and beta-interferon therapy of multiple sclerosis

<130> 524372000100

<140> 09/889,867
<141> 2002-02-04

<150> PP8239
<151> 1999-01-20

<150> PCT/AU00/00032
<151> 2000-01-20

<160> 1

<170> PatentIn version 3.2

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<211> 13
<212> PRT
<213> synthetic peptide

<400> 1

His Cys Leu Gly Lys Trp Leu Gly His Pro Asp Lys Phe
1 5 10

COPY

Atty Docket No.: 524372000100

Inventor: Halle MORTON and Alice CAVANAGH

Application No.: 09/889,867 Filing Date: July 20, 2001
Title: CHAPERONIN 10 AND BETA-INTERFERON THERAPY OF MULTIPLE SCLEROSIS

Documents Filed:
Transmittal (1 page)

Amendment in Response to Non-Final Office Action (12 pages)

Submission of Sequence Listing (2 pages)

Sequence Listing - Paper Copy (1 page)

Sequence Listing - Computer-Readable (1 CD)

Via: Express Mail Airbill NO. EL961005862US
Sender's Initials: KRZ1/mxb6 Date: November 5, 2003

sd-171152

EL961005862US

Inventor: Halle MORTON and Alice CAVANAGH Atty Docket No.: 524372000100

Application No.: 09/889,867
Title: CHAPERONIN 10 AND BETA-INTERFERON THERAPY OF MULTIPLE SCLEROSIS Filing Date: July 20, 2001

Documents Filed:
Transmittal (1 page)

Amendment in Response to Non-Final Office Action (12 pages)

Submission of Sequence Listing (2 pages)

Sequence Listing - Paper Copy (1 page)

Sequence Listing - Computer-Readable (1 CD)

Via: Express Mail Airbill NO. EL961005862US
Sender's Initials: KRZ1/mxb6

sd-171152

Date: November 5, 2003

MMF

I hereby certify that this correspondence is being deposited with the U.S. Postal Service as Express Mail, Airbill No. EL961005862US, in an envelope addressed to: Mail Stop Non-Fee Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date shown below.

Dated: 11-5-03 Signature: _____ (Michael Boyd)

Docket No.: 524372000100
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Halle MORTON and Alice CAVANAGH

COPY

Application No.: 09/889,867

Filed: July 20, 2001

Art Unit: 1646

For: CHAPERONIN 10 AND BETA-INTERFERON THERAPY OF MULTIPLE SCLEROSIS

Examiner: J. Andres

AMENDMENT AND RESPONSE UNDER 37 C.F.R. 1.111

MS Non-Fee Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This is in response to the non-final Office Action mailed August 5, 2003 in connection with the above-identified application. The deadline for response is November 5, 2003. Accordingly, this response is timely filed.

Applicants have given careful consideration to the grounds for rejection. The following amendments and remarks are believed to place this application in condition for allowance, which is respectfully requested.

sd-169515

AMENDMENTS TO THE SPECIFICATION

Please enter the following amendments without prejudice or disclaimer.

In the specification:

On page 1, under the title, please insert the following new paragraph:

CROSS-REFERENCE TO RELATED APPLICATION

This is a 371 application of PCT/AU00/00032, filed January 20, 2000, which claims priority to Australian application PP 8239, filed January 20, 1999, both of which are incorporated by reference in their entirety.

On page 10, please replace the paragraph beginning on line 15 with the following amended paragraph:

List of IFN-β preparations currently used in the treatment of MS. *sc* = subcutaneous injection; *im* = intramuscular injection. BETASERON, interferon beta-1b; AVONEX, interferon beta-1a; REBIF, interferon beta-1a.

On page 15, please replace the paragraph beginning on line 16 with the following amended paragraph:

~~Betaseron~~ BETASERON (interferon beta-1b) (or ~~Betaferon~~ BETAFERON (interferon beta-1b)), for example, is usually supplied by Schering in dehydrated form together with dextrose and human serum albumin as carrier or diluent. Also included is 0.54% NaCl to act as an aqueous carrier or diluent which rehydrates the dehydrated IFN-β/dextrose/human serum albumin prior to injection.

On page 19, please replace the paragraph beginning on line 19 with the following amended paragraph:

The encephalitogenic PLP peptide, residues 139-151 (HCLGKWLGHPDKF (SEQ ID NO:1); Greer et al., 1996, J. Immunol. 156:371-9), was synthesized by step-wise solid phase techniques and purified by reverse-phase HPLC. Purity was determined by electrospray mass spectrometry (≥90% pure).

On page 22, please replace the paragraph beginning on line 28 with the following amended paragraph:

Dilutions of cpn10 were prepared in incubation medium from 100 μg/ml (10.0 μM) to 20 ng/ml (2.0 nM) (see FIG. 6) and 100 μl of each dilution dispensed in triplicate into 96-well flat-bottomed plates (~~Nunclon TM-A~~ NUNCLON MicroWell Plates, Nunc, Roskilde, Denmark). MBP (50 μl, 80 μg/ml incubation medium) and prepared lymph node cell suspension (50 μl; 4 x 106 cells/ml) were added to each well. Control wells (6 wells each) contained either (a) cells with MBP but no cpn10 or (b) cells with no MBP nor cpn10. Plates were incubated in a humidified atmosphere at 37°C, 5% CO2 for 72 hrs. During the last 18 hrs, each well was pulsed with 0.5 μCi [methyl-3H] thymidine (Amersham Pharmacia Biotech) and incorporated radioactivity measured on a scintillation counter (EG&G Wallac, Turku, Finland). Radioactivity incorporated into wells containing cpn10 was compared to that in wells without cpn10. Parallel plates were prepared for assessment of cell viability. After 72 hrs incubation, the supernatant medium was removed, the cells resuspended in 0.1% w/v trypan blue in PBS (20 μl). Cell viability was assessed by trypan blue exclusion.

On page 34, please replace Table 1 with the following amended Table 1:

TABLE 1

	~~Betaseron~~ BETASERON	~~Avonex~~ AVONEX	~~Rebif~~ REBIF
Manufacturer	Schering	Biogen	Ares-Serono
Site of injection	*sc*	*im*	*sc*
Frequency of injection	thrice weekly	one per week	thrice weekly

AMENDMENTS TO THE CLAIMS

Please enter the following amendments without prejudice or disclaimer.

This listing of claims will replace all prior versions, and listings, of claims in the application:

In the claims:

Claim 1 (Currently Amended): A method of treating multiple sclerosis (MS), ~~including the step of~~ comprising administering to an individual [[a]] pharmaceutically-effective ~~amount~~ amounts of cpn10 and IFN-β wherein the therapeutic effect of administering cpn10 and IFN-β is greater than that of administering an equivalent amount of cpn10 or IFN-β alone.

Claim 2 (Original): The method of claim 1, when used as a treatment to prevent relapse of MS.

Claim 3 (Previously Presented): The method of claim 1, wherein IFN-β and cpn10 are administered together.

Claim 4 (Previously Presented): The method of claim 1, wherein IFN-β and cpn10 are administered separately.

Claim 5 (Original): The method of claim 3, wherein IFN-β and cpn10 are administered by injection.

Claim 6 (Original): The method of claim 4, wherein cpn10 is administered orally.

Claim 7 (Previously Presented): The method of claim 4, wherein IFN-β is administered by injection.

Claim 8 (Currently Amended): The ~~process~~ method of claim 1, wherein the pharmaceutically effective amount of cpn10 and IFN-β comprises 5-60 mg of cpn10.

Claim 9 (Original): The method of claim 8, wherein the pharmaceutically-effective amount of cpn10 and IFN-β comprises 10-30 mg of cpn10.

Claim 10 (Original): The method of claim 1, wherein the pharmaceutically-effective amount of cpn10 and IFN-β comprises 1-10 Million International Units (MIU) of IFN-β.

Claim 11 (Currently Amended): The method of claim 10, wherein the pharmaceutically-effective amount of cpn10 and IFN-β comprises 4-6 ~~(MIU)~~ MIU of IFN-β.

Claim 12 (Withdrawn): A pharmaceutical composition for treating MS, wherein said composition an amount of cpn10 and of IFN-β effective to treat MS in combination with a pharmaceutically-acceptable carrier or diluent.

Claim 13 (Withdrawn): The composition of claim 12, wherein the pharmaceutically-effective amount of cpn10 and IFN-β comprises 5-60 mg of cpn10.

Claim 14 (Withdrawn): The composition of claim 13, wherein the pharmaceutically-effective amount of cpn10 and IFN-β comprises 10-30 mg of cpn10.

Claim 15 (Withdrawn): The composition of claim 12, wherein the pharmaceutically-effective amount of cpn10 and IFN-β comprises 1-10 MIU of IFN-β.

Claim 16 (Withdrawn): The composition of claim 15, wherein the pharmaceutically-effective amount of cpn10 and IFN-β comprises 4-6 MIU of IFN-β.

Claim 17 (Withdrawn): A kit comprising an amount of cpn10 and IFN-β effective to treat MS and, in a separate container, a pharmaceutically-acceptable carrier or diluent.

Claim 18 (Withdrawn): The kit of claim 17, wherein said IFN-β is in dehydrated form, which in use, is rehydrated by said pharmaceutically-acceptable carrier or diluent.

Claim 19 (Withdrawn): The kit of claim 18, wherein said cpn10 is in dehydrated form and in use, is rehydrated by said pharmaceutically-acceptable carrier or diluent.

Claim 20 ((Withdrawn): The kit of claim 17, wherein said cpn10 is in tablet or capsule form.

Claim 21 (Withdrawn): The kit of claim 17, wherein the pharmaceutically-effective amount of cpn10 and IFN-β comprises 5-60 mg of cpn10.

Claim 22 (Withdrawn): The kit of claim 21, wherein the pharmaceutically-effective amount of cpn10 and IFN-β comprises 10-30 mg of cpn10.

Claim 23 (Withdrawn): The kit of claim 17, wherein the pharmaceutically-effective amount of cpn10 and IFN-β comprises 1-10 MIU of IFN-β.

Claim 24 (Withdrawn): The kit of claim 23, wherein the pharmaceutically-effective amount of cpn10 and IFN-β comprises 4-6 MIU of IFN-β.

REMARKS

Claims 1-24 are pending in this application. Claims 12-24 have been withdrawn from consideration deemed non-elected subject matter. Claims 1-11 were rejected under 35 U.S.C. § 103(a). The specification was objected to because of informalities.

By this amendment, claims 1, 8 and 11 have been amended without prejudice or disclaimer of any previously claimed subject matter. Support for the amendments can be found, *inter alia*, throughout the specification. Support for the amendment to claim 1 is found, *inter alia*, at page 12, lines 10-13, at page 27, lines 15-26, and at page 31, lines 14-20.

The amendments are made solely to promote prosecution without prejudice or disclaimer of any previously claimed subject matter. With respect to all amendments and cancelled claims, Applicants have not dedicated or abandoned any unclaimed subject matter and moreover have not acquiesced to any rejections and/or objections made by the Patent Office. Applicants expressly reserve the right to pursue prosecution of any presently excluded subject matter or claim embodiments in one or more future continuation and/or divisional application(s).

Applicants have carefully considered the points raised in the Office Action and believe that the Examiner's concerns have been addressed as described herein, thereby placing this case into condition for allowance.

Specification Objections

The disclosure has been objected to because a sequence on page 19 lacks a sequence identifying number and because uncapitalized trademarks were used. Applicants have herewith submitted a Sequence Listing and amended the specification to include a sequence identifying number. The specification has also been amended to capitalize the trademarks and to include generic terminology. Applicants respectfully request withdrawal of the specification objections.

Rejections under 35 U.S.C. §103

Claims 1-11 were rejected under 35 U.S.C. §103(a), as allegedly being unpatentable over Morton *et al.* (WO 95/15338, 1995, "Morton") in view of The Interferon Beta Multiple Sclerosis Study Group, *Neurology*, 1993, vol. 43, pp. 655-661 ("The MS Study"). Applicants respectfully traverse this rejection.

A *prima facie* case of obviousness requires that three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20USPQ2d 1438 (Fed. Cir. 1991); MPEP §2143. If any one of these three criteria is not met, a *prima facie* case of obviousness has not been established. As presented below, Applicants respectfully submit that a *prima facie* case of obviousness has not been established.

The amended claims are directed to a method of treating multiple sclerosis (MS) comprising administering pharmaceutically-effective amounts of cpn10 and IFN-β to an individual. In the claimed method, the therapeutic effect of administering cpn10 and IFN-β is greater than that of administering an equivalent amount of cpn10 or IFN-β alone.

The Examiner states that Morton teaches the use of chaperonin 10 (cpn10) for the treatment and relapse prevention of MS and acknowledges that Morton "fails to teach the administration of interferon β." Office Action, page 4. The Examiner also states that The MS Study teaches use of interferon β (IFN-β) for the treatment of MS. The Examiner then asserts that it would be obvious to one of ordinary skill in the art to combine the teachings in Morton and The MS

Study to administer IFN-β and cpn10 to treat MS. Applicants respectfully disagree with this assertion.

As described throughout the specification, the present invention is based on the discovery that interferon β and chaperonin 10 act via different mechanisms to co-operatively reduce EAE symptoms and decrease EAE relapse frequency. See, for example, page 5, lines 28-31; page 12, lines 1-17; page 24 lines 15-29; page 31, lines 14-20; page 32 line 23 to page 33 line 2; and page 33, lines 12-21. At page 32, lines 7-9, for example, the specification describes that IFN-β and cpn10 use different suppressor-inducer pathways to downregulate lymphocyte activity. Applicants demonstrate and describe that administration of IFN-β and cpn10 in combination give a greater suppression of EAE than either substance administered alone and therefore act synergistically (for example, in Example 6, at page 31, lines 16-17, and at page 33, lines 14-15).

Therefore use of IFN-β and cpn10 as a combined therapeutic treatment of multiple sclerosis is a more efficacious method of managing the disease and prevents the need for IFN-β to be administered at doses which evoke side effects in patients.

Applicants respectfully submit that there is no suggestion or motivation in the references or in the art to modify Morton or The MS Study to arrive at the claimed invention, *i.e.*, the administration of the combination of cpn10 and IFN-β such that the therapeutic effect is greater than that of administering an equivalent amount of either cpn10 or IFN-β alone.

Applicants further submit that neither Morton nor The MS Study, either alone or combined, provide a reasonable expectation of success of the claimed invention. Since there is no teaching or suggestion in the cited references of the co-operative effect of administering the combination of cpn10 and IFN-β, the cited references provide no expectation of success for the claimed methods.

In addition, there is no teaching or suggestion of the claimed invention in either Morton or The MS Study, either alone or combined.

Applicants respectfully submit that a *prima facie* case of obvious has not been made.

Even if it was argued that a *prima facie* case is made (which it decidedly is not), Applicants respectfully point out that the claimed method results in an unexpected and very different response than any predicted response that would flow from the teachings of Morton and The MS Study. The unexpected response associated with the claimed invention also is of practical significance and benefit as discussed in the specification. Use of IFN-β and cpn10 as a combined therapeutic treatment of MS is a more efficacious method of managing the disease and prevents the need for IFN-β to be administered at doses which evoke side effects in patients.

Thus, Applicants respectfully submit that the claimed invention is not obvious in view of the cited references.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejections under 35 U.S.C. §103.

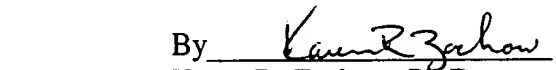
CONCLUSION

Applicants believe that all issues raised in the Office Action have been properly addressed in this response. Accordingly, reconsideration and allowance of the pending claims is respectfully requested. If the Examiner feels that a telephone interview would serve to facilitate resolution of any outstanding issues, the Examiner is encouraged to contact Applicants' representative at the telephone number below.

In the unlikely event that the transmittal letter is separated from this document and the Patent Office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Assistant Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing docket no. 524372000100. However, the Assistant Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Dated: November 5, 2003

Respectfully submitted,

By 

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